



What helps students of poverty read science texts at grade level?

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Methodology

- Qualitative participant observation study of small groups in 5 fourth grade classrooms in a high poverty, high minority Connecticut school during 4 months of the 5th year of researching in the same classrooms
- Research questions: 1) Will small groups be motivated by different forces or the same forces as a whole group cohort (teacher praise, self-selection of texts, collaboration with the teacher (researcher) as learner, and choice of tasks and time to complete them? 2) What are the factors that enable struggling readers to read science texts at grade level?"
- Data: Student notes and writing; researcher lesson plans and teaching charts; student interviews; and field notes.
- Interview Protocol:
- Analysis: Constant comparison of categories to create a theory, grounded in the data; “theoretical sampling” to examine categories until all properties of a category are developed; memo writing about the categories to examine themes and write articles for peer reviewed journals.

Letter from student explaining what she had learned:

Dear Miss White,

You are going to be glad about how much I have learned about electricity and how it’s important. We learned: It’s dangerous to play with electricity. It can shock you if it’s wet or if you pull on a wire.

Electricity is powerful. It helps with school, homes, jobs, even with the street lights. It can shock you. It is made of electrons moving around a circuit. The circuit opens and closes. It opens and closes when you turn on and off the lights.

Electrons move from place to place. You can not destroy electrons. An example of static electricity is when an electron moves from one atom to another. That gives the new atom a negative charge.

Comprehension strategies help me learn about electricity. One comprehension strategy is picturing. Picturing helps me to see electricity and to understand what’s happening and how electricity works. By picturing I can see, hear, feel, smell, taste electricity working. For example, I can see electricity being powerful around the schools, homes, jobs, and street lights, and a big ball of electricity. I can hear electricity shocking someone because they were playing with wires. I can feel electricity moving from place to place. I can smell and taste electricity beaming round and round. I can taste electricity shocking my house.

Another comprehension strategy is wondering. By wondering I can think about what I am wondering about. For example, I’m wondering why the diagram, “What is electricity,” has lines between the + sign and the – sign. I think the reason for what I’m wondering is they have lines because that was the way they put in the battery. It is helpful to wonder because sometimes when you wonder you find the right answer. For example, I wondered what electrical energy is. I think it means it has a good amount of energy. The only difference is the frequency, how fast or often, and it was right when I read the paragraph.

Implication

Graphic organizer helped students organize their letters into main ideas and details that elaborated on them. Letters showed an understanding of many of the concepts students had learned about electricity. Letters also showed gaps in students’ learning which can be addressed in follow-up lessons.

Selected Student Notes: 11/8 Chart **What I wonder/What I think:** I'm wondering why the diagram has lines between the + sign and the - sign. I think the reason they have the lines is because that was the way they put in the battery. I wonder why electricity can shock you. I think because it has an electric pull that the plug is powerful and it is a part of the circuit. I wonder why the circuit is opening and closing when you turn on and off the light. I think because...

11/22 Asking own questions/making inferences: 1. I think electrical charge means it's a charge that's full of electricity and atoms. 2. What does it mean for something to be substance-like? 3. The main idea is you can't destroy an electric charge. (What is electrical energy?) 1. I think it means it has a good amount of energy that has an electrical power of energy. 2. The only difference is the frequency--how fast or often.

Selected Research Codes

Code	Example	Implication
Students’ background knowledge	<i>What confused me is I watched a show and it said your brain is 5 pounds, not 3 pounds ...I didn’t know that your brain had wrinkles (student’s note 9/27)</i>	<i>Previous learning interferes with or paves the way for current learning.</i>
Questions resulting from annoyance	<i>Why does your brain have to download like a computer? (student’s note 9/27)</i>	Student will read on halfheartedly, having lost faith.
Questions resulting from incredulousness	<i>How does someone know that it would take you 3,000 years to count brain cells? (student’s note 9/27)</i>	Student will read on with interest to see what other facts s/he can question.
	<i>How does your brain do 15 miles, 241 kilometers, an hour? (student’s note 9/27)</i>	Student will read on to see if question is answered.